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which finally went alive to England. I had many hunts for quadrupeds and preserved some up to the size of gray and fox squirrels, besides keeping red and flying squirrels, a racoon, opossum, and other animals as pets, which attracted much interest among visitors. I had a boy's mania for hunting, and altho I could only get small animals and birds, I spent many a day in shooting, no doubt with impoverishment to physical health. I would wade thru snow knee-deep for miles with poor results as to game, but thought if I ever went into a wild country the hunter's life would be my choice. Why man could not live happy on the natural products of the forests and streams was a problem I expected to solve in the future. About this time Tanner's 'Thirty Years Among the Indians of Canada' showed me much of the difficulties in the way of such a mode of existence."

In this we have a little retrospect into the early life of Dr. Cooper from his own pen. The tendencies thus early manifested were fostered by his father, to whom Dr. Cooper owed his preparation for his later work in life, and it was at the home of William Cooper that such men as Samuel L. Mitchell, M. D., Nathaniel Paulding, poet, Dr. John Torrey, the botanist, Prof. Eaton, and Lucien Bonaparte were wont to meet. It is not difficult to see how these men

may all have exerted a profound influence on the mind of the young naturalist. At the age of twenty-eight, Dr. Cooper became a member of the New York Lyceum, now the New York Academy of Sciences, his father, at the age of nineteen, having been one of the founders. Dr. Cooper was one of the early members of the California Academy of Sciences, holding for several years the office of vice-president and for some years being curator of the section of palæontology, which he had given much time to build up. His last actual work was the compiling of a Catalog of California Fossils, issued as Bulletin No. 4 by the California State Mining Bureau, Sept. 1894, Parts II, III, IV and V.

Dr. Cooper is the last of that circle of distinguished naturalists, who had been the foremost zoologists and botanists in his early days. Such men as Asa Gray, Baird, LeConte, Hayden, Meek, George Gibbs, Torrey, Warren and Dr. Suckley were his colaborers. To the memory of Dr. Cooper we can have no better monument than the valuable researches which he carried on for over forty years of his life, consisting of some seventy-five papers on the birds, shells, fossils, geology, forests and flora of the Pacific Coast.

W. OTTO EMERSON,
Haywards, California.

The Ornithological Writings of Dr. J. G. Cooper.

BY JOSEPH GRINNELL.

IN the present paper I have listed all the ornithological writings of the late Dr. Cooper known to me. These number twenty-six. It will be noted that the majority were printed between 1860 and 1880. While the number of Cooper's titles was not great, his articles thus appeared at a time when much less was written on birds than now, and when much of the subject-matter we might now regard as commonplace

was new information altogether. As all but two of his publications pertained at least in part to the birds of California we of the Cooper Ornithological Club owe much to Dr. Cooper as being a pioneer in our line of study. Perhaps his best known work is his "Ornithology of California" which is a desideratum of every working bird-student. Aside from his signed articles, Cooper furnished material, in the way of speci-

mens and manuscript notes, which was used by Baird in 1858 and 1864, and especially by Baird, Brewer and Ridgway in their colossal "History of North American Birds," 1874 and 1884.

Birds which have been named in honor of Dr. J. G. Cooper are *Buteo cooperi* CASSIN (status now in doubt), *Podiceps cooperi* LAWRENCE (= *Colymbus holballi*), *Pyranga cooperi* RIDGWAY (= *Piranga rubra cooperi*) and *Melospiza fasciata cooperi* RIDGWAY.

1860. Pac. R. R. Rep. XII. Book II. 1860 —Part III. Route near the forty-seventh and forty-ninth parallels, explored by I. I. Stevens, Governor of Washington Territory in 1853-55. Zoological Report. — No. 3. Report upon the Birds collected on the Survey. Chapter I. Land Birds, by J. G. Cooper, M. D. Chapter II. Water Birds, by Dr. G. Suckley, U. S. A. pp. 140-291, 8 Pl. (This was Cooper's first published article on ornithology and pertains chiefly to the birds noted during the survey of Oregon and Washington. There are also a few references to Californian species, of particular note being his account of the capture of the unique type of *Buteo cooperi* Cassin, at Mountain View, Santa Clara County. Although Cooper and Suckley present separate authorship for the "Land Birds" and "Water Birds," respectively, each evidently contributed written accounts to both chapters. Cooper's initial as a rule follows the most extended and detailed field-notes.)

1861. New Californian Animals. —Proc. Cal. Ac. Nat. Sc. II, July 1861, pp. 118-123. (Cooper here definitely records from the southeastern part of the State *Panyptila melanoleuca* [= *Aeronautes melanoleucus*], *Chordeiles texensis*, *Tyrannus vociferans*, *Vireo belli* [= *V. pusillus*], *Harporhynchus* [= *Toxostoma lecontei*, *Icterus cucullatus* [nelsoni], and *Hydrochelidon plumbea* [= *H. surinamensis*] as well as others from Fort Mojave. He also describes two new species from Fort Mojave, *Athene whitneyi* [= *Micropallas whitneyi*] and

Helminthophaga luciae).

1865. On a new Cormorant from the Farallone Islands, California. —Proc. Ac. Nat. Sc. Phil., January 1865, pp. 5-6. (Description of *Graculus Bairdii* [= *Phalacrocorax pelagicus resplendens*].)

1868. Some Recent Additions to the Fauna of California. —Proc. Cal. Ac. Sc. IV, November 1868, pp. 3-13. (Mention, with occasional critical remarks, of forty-five species, some of them for the first time recorded from the State).

1869. The Fauna of Montana Territory. —Am. Naturalist, 1869; II, January, pp. 596-600; III, March, pp. 31-35; April, 73-84. Corrections, June, p. 224. (More or less extended notes on about 110 species of birds).

1869. The Naturalist in California. —Am. Naturalist III; June, pp. 182-189; November, pp. 470-481. (Field-notes on many birds observed on the Los Angeles Plains, at Cajon Pass, along the Mojave River, and in the vicinity of Fort Mojave, which latter place, however, is on the Arizona side of the Colorado River).

1869. Notes on the Fauna of the Upper Missouri. —Am. Naturalist III, August 1869, pp. 294-299. (Includes numerous ornithological notes).

1870. Geological Survey of California. | J. D. Whitney, State Geologist. | — | Ornithology. | Volume I. | Land Birds. | Edited by S. F. Baird, | from the Manuscript and Notes of | J. G. Cooper. | — | Published by authority of the Legislature. | 1870. pp. i-xi, 1-592; with a great many figures. (This, Cooper's greatest work, includes the birds of all the region west of the Rocky Mountains. Most of the text is in the nature of biographical accounts, and included most of what was known at the time of publication. The technical parts were prepared by Baird).

1870. The Fauna of California and its Geographical Distribution. —Proc. Cal. Ac. Sc. IV, February 1870, pp. 61-81. (Contains separate lists of birds for different localities, including those

observed on several of the Santa Barbara Islands).

1871. Monterey in the Dry Season. —Am. Naturalist IV, February 1871, pp. 756-758. (Running account of thirty species of birds observed in the vicinity of Monterey.)

1874. Animal Life of the Cuyamaca Mountains.—Am. Naturalist VIII, January 1874, pp. 14-18. (Brief mention of 84 species of birds observed in the vicinity of the Cuyamaca Mountains, San Diego County).

1874. "Verbal Remarks." —Proc. Cal. Ac. Sc. V, December 1874, pp. 414-415. (Specimens of *Uria lomvia*, which later proved to have been the young of *Uria californica*, and *Stercorarius parasiticus* from the coast of California.)

1875. Notes on California Thrushes. —Am. Naturalist IX, February 1875, pp. 114-116. (Corrections in regard to the "Ornithology of California:" *Turdus ustulatus* and "*T. nanus*.")

1875. New Facts relating to Californian Ornithology—No. 1. —Proc. Cal. Ac. Sc. VI, December 1875, pp. 189-202. (Extended critical and biographical notes on a number of the less known species.)

1876. Early nesting of the Anna Hummingbird. —Am. Naturalist X, January 1876, pp. 48-50. (In the vicinity of Haywards).

1876. Californian Garden Birds. —Am. Naturalist X, February 1876, pp. 90-96. (Running account of about forty species nesting in the neighborhood of Haywards. Incidentally Cooper names and characterizes on page 91 a western race of the Tree Swallow, "*Hirundo bicolor* var. *vespertina*." It is interesting to note that this was the only "variety" or subspecies Cooper ever named, for as shown by most of his writings he did not lean strongly toward trinomialism. In spite of the fact that *vespertina* was ignored by Cooper's contemporaries, and has until now remained almost completely buried, there seems to be a distinguishable

western race of the Tree Swallow, and this should be known as *Tachycineta bicolor vespertina* (Cooper).

1876. Nesting Habits of the Californian House Wren (*Troglodytes aedon* var. *parkmanni*). —Bull. Nutt. Orn. Club I, November 1876, pp. 79-81.

1877. On Seventy-five Doubtful West-coast Birds. —Bull. Nutt. Orn. Club II, October 1877, pp. 88-97. (Remarks concerning numerous species attributed to California by early writers, but the occurrence of which is now doubtful).

1878. Californian Prairie Chickens. —Bull. Nutt. Orn. Club III, April 1878, p. 96. (On the status in California of *Tetraocolumbianus* [= *Pediocetes phasianellus columbianus*].)

1880. On the Migration and Nesting Habits of West-coast Birds. Proc. U. S. N. M. II, January 1880, pp. 241-251. (A list of 73 species, with dates of migration and nesting at several points in California).

1886. The 'Water Birds of North America'—A Few Corrections. —Auk III, January 1886, pp. 124-126. (Relating to the notes on California birds incorporated from Cooper's writings into Baird, Brewer and Ridgway's work).

1886. The 'Water Birds of North America'—Explanations. —Auk III, July 1886, pp. 401-402.

1887. Additions to the Birds of Ventura County, California. —Auk IV, April 1887, pp. 85-94. (Extended notes on 29 species, with mention of many more).

1890. Note on Pacific Coast Birds. —Auk VII, April 1890, pp. 214-216. (Explanations in regard to the "Ornithology of California.")

1890. A Doomed Bird. —Zoe I, October 1890, pp. 248-249. (The California Vulture).

1891. Unusual Nesting Place of *Empidonax hammondi*. —Zoe II, July 1891, pp. 104-107. (Breeding at Haywards).